(No Model.)

C. E. BUELL.

AUTOMATIC FIRE EXTINGUISHER.

No. 278,654. Patented May 29, 1883.

Fig. 2.

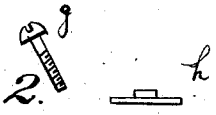
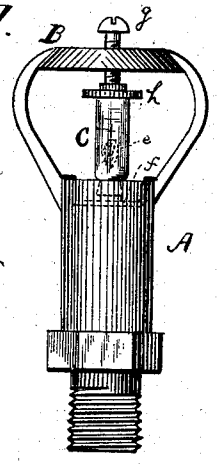


Fig. 1.



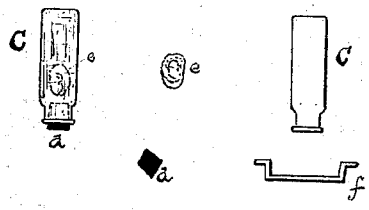


Fig. 3.

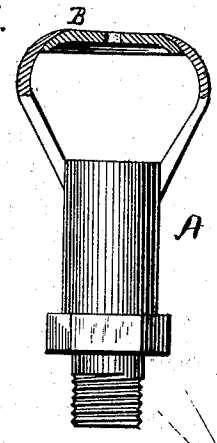


Fig. 4.

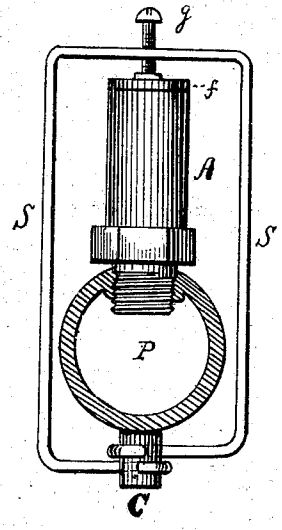
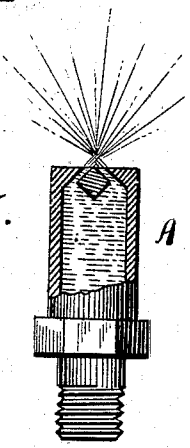


Fig. 5.



WITNESSES

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CHARLES E. BUELL, OF NEW HAVEN, CONNECTICUT.

AUTOMATIC FIRE-EXTINGUISHER.

SPECIFICATION forming part of Letters Patent No. 278,654, dated May 29, 1883.

Application filed May 5, 1883. (No model.)

To all whom it may concern:

Be it known that I, CHARLES E. BUELL, of the city and county of New Haven, State of Connecticut, have invented Improvements in Automatic Fire-Extinguishers, of which the following is a specification.

My invention consists, primarily, of a nozzle or discharge-opening that is held normally closed by devices adapted to burst by the action of heat upon a confined expansible body, and allow said nozzle or discharge-opening to become open, substantially as hereinafter described.

My invention further consists in certain combinations and sub-combinations, that will be hereinafter described.

Figures 1 and 4 show sprinklers made in accordance with my invention. Figs. 2, 3, and 5 show parts of the same.

Referring to Fig. 1 of the drawings, A is a nozzle having a support, B, attached thereto. A dish-like plate, *f*, sets into the discharge-opening of the nozzle A, and is adapted to close the opening water-tight when pressed down, and is preferably a lead-faced plate.

C is a glass tube containing muriatic acid, in which is immersed zinc coated with paraffine. The tube is sealed or closely stoppered. The tube C bears against the dish-like plate *f*, and is pressed thereon by the screw *g*, which runs in threads in the support B. A plate, *h*, may be employed to receive the pressure of the screw *g* and equalize the pressure on the tube C.

Fig. 2 shows the screw *g*, plate *f*, plate *h*, tube or vial C, stopper *d*, and capsule *e*, of zinc coated with paraffine.

Fig. 3 shows the support B in cross-section as a spreader for deflecting the water that is discharged from the opened nozzle A.

When strips of zinc, or powdered zinc, or chlorate of potash and sugar are coated with paraffine and immersed in muriatic acid in a bulb, tube, or vial, no action takes place at ordinary temperatures; but with an increase of temperature to about 140° Fahrenheit the paraffine is melted off or otherwise affected, and almost instantly thereafter the increased pressure in the containing-tube bursts it. When employed to hold a fire-extinguishing nozzle closed, the bursting of the tube allows the nozzle to become open.

Various metals, salts of metals, and compounds may be used coated with a film of paraffine, or held separated from a decomposing agent by a protecting-partition that is removable by heat in a similar manner to that above described. The salts chlorate of potash may be used immersed in sulphuric acid without a coating of paraffine or like protection, and when an increase of temperature occurs the chlorate of potash is suddenly decomposed, and a containing-tube may be burst by the expansion thus brought about. Mercury, volatile liquids, and gases under pressure or in a liquid vehicle may be employed in easily-fractured tubes, bulbs, or vials closely sealed or stoppered. It is preferable to use liquids or solids or liquids and solids which decompose and create sudden pressure when acted on by heat, or when united by the action of heat upon a separating substance or compound, and that will not freeze at ordinary temperatures.

Fig. 4 is a modification in which a spring-support, S S, clasps a sealed tube, C, beneath the water-pipe. The tube C is an easily-fractured tube containing a confined expansible body which will, when acted on by heat, burst the tube and release the springs, which fly apart and fall away from the nozzle A, which becomes open.

Fig. 5 shows the nozzle A in cross-section, constructed so as to deliver water from two or more orifices in intersecting streams, spreading, deflecting, or dividing the water over a desired area, as described in English Patent No. 673 of 1870, thus avoiding the employment of a spreader or deflecting-plate.

By employing the screw *g*, any adjustment of pressure may be obtained in closing the nozzles.

A lever or wedge may be used in place of a screw for adjustment, or a tube be pressed down over a nozzle or opening and secured.

I reserve the right to claim in another application any improvement described and shown in this application and not now claimed.

What I claim is—

1. A nozzle or discharge-opening held closed by devices adapted to burst by the action of heat upon a confined expansible body and allow said nozzle to open, substantially as and for the purpose set forth.

2. The combination, with a nozzle or dis-

charge-opening held normally closed by a device adapted to burst by the action of heat, of means for spreading, deflecting, and dividing the water from said opened nozzle or opening, substantially as described.

3. A nozzle adapted to discharge intersecting streams, held normally closed by a device that will burst by the action of heat.

4. A nozzle held closed by a device adapted to burst by the action of heat, combined with means for adjusting said closing device against a water-pressure.

5. A nozzle or discharge-opening held normally closed by a tube or bulb containing a decomposable substance and a decomposing agent held separated by a film of paraffine adapted to become removed by the action of heat and allow the decomposable body and decomposing agent to unite, whereby said containing-tube will be burst and the nozzle opened, substantially as described.

CHARLES E. BUELL.

Witnesses:

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